

CLAIMS

1. A method for reversibly reducing detrimental effects of one or more passive nonlinear impairments in a transmission line, each passive nonlinear impairment characterized by an operating curve, the method comprising:
 - connecting communications equipment to the transmission line; and
 - enabling a bias current through the transmission line;
 - the bias current having a magnitude selected for biasing at least one of the passive nonlinear impairments to an operating point in a predetermined region of its operating curve.
2. The method of claim 1, wherein the transmission line connects a central office with a subscriber location, the communications equipment is telephone equipment, and the transmission line is a twisted pair.
3. The method of claim 1, wherein the transmission line is a coaxial cable.
4. The method of claim 2, wherein the twisted pair is connected at the central office to a DC power source for providing telephone service.
5. The method of claim 4, wherein the twisted pair is adapted for supporting data communications between the central office and the subscriber location.
6. The method of claim 5, the bias current originating from the DC power source.
7. The method of claim 6, wherein the magnitude of the bias current is selected for improving digital subscriber line (DSL) performance on the twisted pair.

8. A combination for reversibly reducing detrimental effects of one or more passive nonlinear impairments in a transmission line, each passive nonlinear impairment characterized by an operating curve, the combination comprising:

communications equipment for connection to the transmission line; and

a circuit in the communications equipment for enabling a bias current through the transmission line, the bias current having a magnitude selected for biasing at least one of the passive nonlinear impairments to an operating point in a predetermined region of its operating curve.

9. The combination of claim 8, wherein the transmission line connects a central office with a subscriber location, the communications equipment is telephone equipment, and the transmission line is a twisted pair.

10. The combination of claim 8, wherein the transmission line is a coaxial cable.

11. The combination of claim 9, wherein the twisted pair is connected at the central office to a DC power source for providing telephone service.

12. The combination of claim 11, wherein the twisted pair is adapted for supporting data communications between the central office and the subscriber location.

13. The combination of claim 12, the bias current originating from the DC power source.

14. The combination of claim 13, wherein the magnitude of the bias current is selected for improving digital subscriber line (DSL) performance on the twisted pair.

15. A modem for reversibly reducing detrimental effects of one or more passive nonlinear impairments in a transmission line, each passive nonlinear impairment characterized by an operating curve, the modem comprising:

a conductive element for connection across the transmission line; and

means for selectively connecting the conductive element across the transmission line to enable a bias current through the transmission line, the bias current having a magnitude selected for biasing at least one of the passive nonlinear impairments to an operating point in a predetermined region of its operating curve.

16. The modem of claim 15, wherein the transmission line is a twisted pair connecting a central office with a subscriber location.

17. The modem of claim 15, wherein the transmission line is a coaxial cable.

18. The modem of claim 16, wherein the twisted pair is connected at the central office to a DC power source for providing telephone service.

19. The modem of claim 18, wherein the conductive element is an adjustable resistor having a first terminal and a second terminal connected to one wire of the twisted pair and the means for connecting includes a switch having a first terminal connected to the second terminal of the adjustable resistor and a second terminal connected to the second wire of the twisted pair.

20. The modem of claim 19, wherein the means for connecting further includes a control unit connected to the adjustable resistor for adjusting the resistance of the adjustable resistor to a magnitude that causes the bias current to assume the selected magnitude, and connected to the switch for causing the switch to connect and disconnect the adjustable resistor across the twisted pair.